



## Midwest USA Suction Trap Network

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The Suction Trap Network (STN) is a set of suction traps located in multiple states in the Midwest, plus Louisiana. More details about the STN can be found in [Lagos-Kutz et al. \(2020\) doi.org/10.1093/ae/tmaa009](https://doi.org/10.1093/ae/tmaa009). Researchers continued monitoring for aphids and other insects despite the quarantine due to COVID-19. The objective of the STN is to monitor aphids of agricultural interest, to detect invasive species, to track the phenology of *Resseliella maxima* (soybean gall midge), *Frankliniella tritici* (Eastern flower thrips), and *Neohydatothrips variabilis* (soybean thrips, vectors of Soybean Vein Necrosis Virus or SVNV), *Empoasca fabae* (potato leafhopper), and *Orius insidiosus* (pirate minute bugs). Other researchers have requested hover flies, whiteflies, and flying ants be added to the monitoring list, to study their spatial and temporal distributions as well as perform genetic population studies.

### Materials and Methods

The suction traps located in Iowa are at Ames, Kanawha, Nashua, and Sutherland, supervised by Erin Hodgson, Matthew Schnabel, Kenneth Pecinovsky, and Terry Tuttle, respectively. The collection of suction traps started May 21, and the last collections were October 22. The weekly suction trap samples were sent to the USDA Laboratory in Urbana. The insects targeted were identified by D. L-K, and the whole samples (not only the insects targeted), were stored in 95% ethanol at -20°C.

### Results and Discussion

The flight activity of the total number of aphids collected varied across the locations in Iowa. The location with the highest number of aphids and other insects was Kanawha followed by Sutherland and Nashua (Table 1). Due to technical problems of the suction trap located in Ames, there were no suction trap samples in August and October. The population dynamics of the [eight most abundant aphid species](#) for all suction trap locations can be found at [suctiontrapnetwork.org/data](https://suctiontrapnetwork.org/data). The website shows data from 2018 to 2021. Earlier years' data can be requested from the senior author or website manager, Joseph LaForest. The population dynamics of these aphids caught in Kanawha, Nashua, and Sutherland are shown in Figure 1. The most abundant aphid pest for all locations was *Rhopalosiphum padi* followed by *Sitobion avenae*, *Schizaphis graminum*, *R. maidis* and *Acyrtosiphon pisum*. Few individuals of the invasive species *Phorodon cannabis* were found and none of *Melanaphis sacchari* (Table 1).

For the other insects monitored in the STN, the population of *F. tritici* declined at the end of August. In contrast, the population of *N. variabilis* increased the third week of July and declined in the middle of October. The counts of *E. fabae* peaked in the middle of June and July. Finally, the phenology of the predator, *O. insidiosus* was like the soybean thrips, *N. variabilis* (Figure 2, Table 1). *R. maxima* were not found in the traps. [Publications](#) that used data from the suction trap samples can be found at [suctiontrapnetwork.org/publications](https://suctiontrapnetwork.org/publications).

**Figure 1. Seasonal population dynamics of the eight most abundant aphid species from a suction trap located in Kanawha. A. Kanawha, B. Nashua, and C. Sutherland. Y axis represents the weekly aphid counts, and the X axis the weekly dates of collections. [Graphing from suctiontrapnetwork.org/data](http://GraphingfromSuctionTrapNetwork.org/data).**

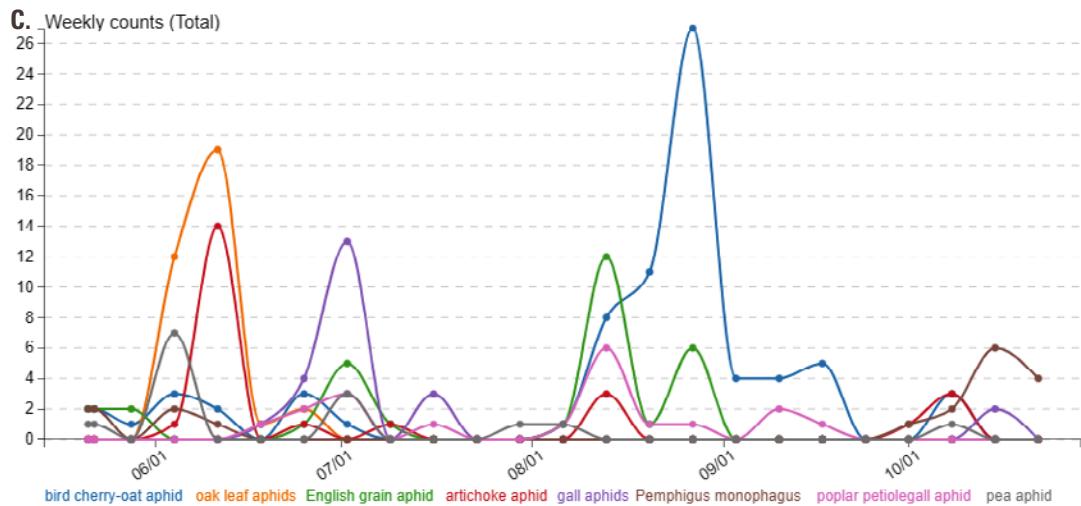
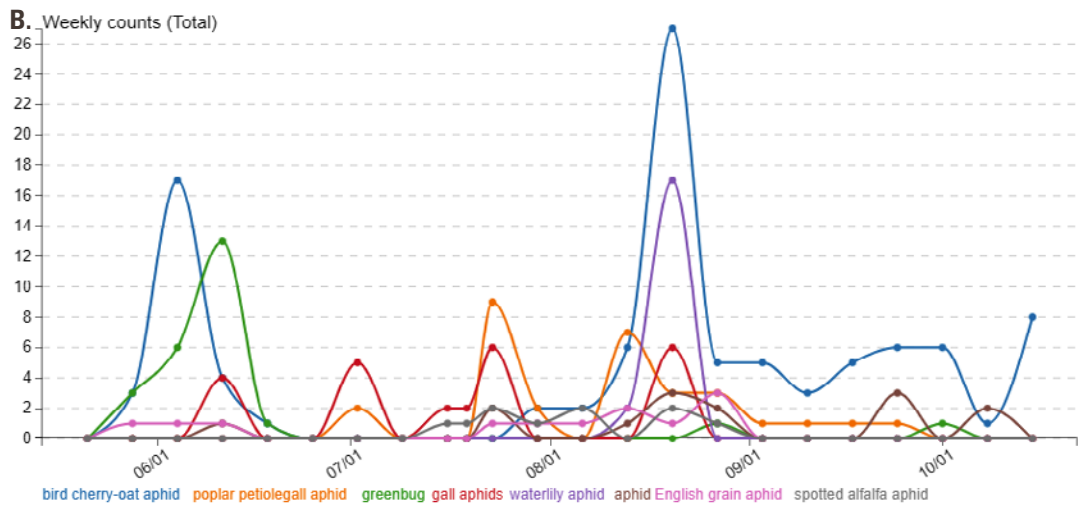
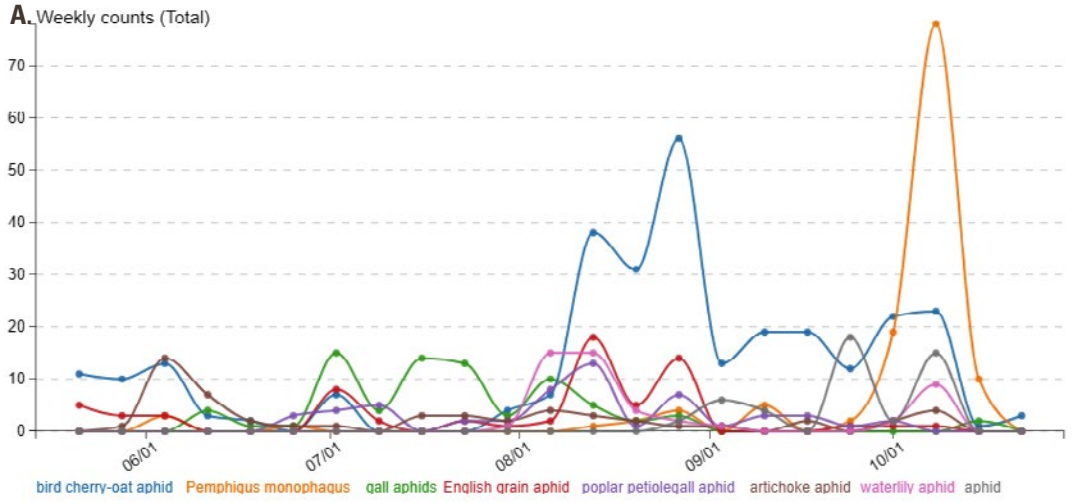


Figure 2. Seasonal population dynamics of Eastern flower and soybean thrips, potato leafhopper and pirate minute bug collected in Iowa. Y axis represents the weekly aphid counts, and the X axis the weekly dates of collections.

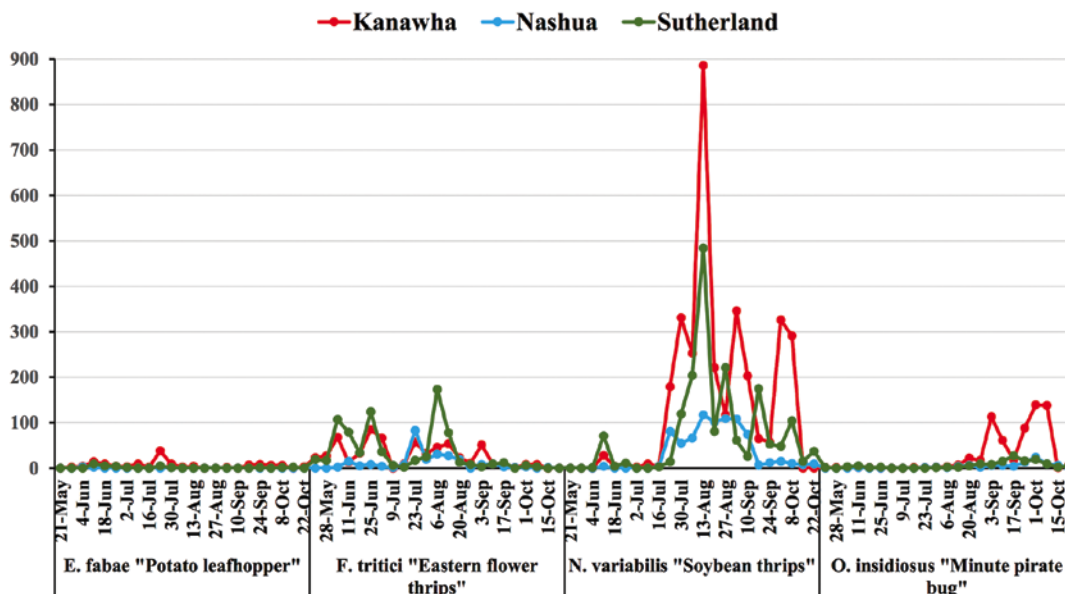


Table 1: Total number of aphid pests and other insects collected from suction traps located in Iowa during the suction trap season from May 21-October 22.

Aphid Pest Species	Kanawha	Nashua	Sutherland
<i>Acyrtosiphon pisum</i> pea aphid	30	10	14
<i>Aphis craccivora</i> black legume aphid	12	3	8
<i>Aphis glycines</i> soybean aphid	5	1	2
<i>Aphis gossypii</i> cotton-melon aphid	3	0	0
<i>Lipaphis pseudobrassicae</i> turnip aphid	15	9	3
<i>Macrosiphum euphorbiae</i> potato aphid	2	1	0
<i>Myzus persicae</i> peach potato aphid	4	2	4
<i>Phorodon cannabis</i> cannabis aphid	9	1	1
<i>Protaphis middletonii</i> corn root aphid	1	2	3
<i>Rhopalosiphum maidis</i> corn leaf aphid	24	8	13
<i>Rhopalosiphum padi</i> bird cherry-oat aphid	294	101	75
<i>Rhopalosiphum rufiabdominale</i> rice root aphid	6	2	4
<i>Schizaphis graminum</i> greenbug"	28	24	10
<i>Sitobion avenae</i> English grain aphid	66	12	31
<i>Therioaphis trifolii</i> spotted alfalfa aphid	14	9	13
<b>Other Insects</b>			
<i>Empoasca fabae</i> potato leafhopper	131	6	29
<i>Frankliniella tritici</i> Eastern flower thrips	630	247	771
<i>Neohyadatothrips variabilis</i> soybean thrips	3324	781	1732
<i>Orius insidiosus</i> pirate minute bug	623	87	132